Making data centers greener

STUDY: SERVER FACILITIES WILL DOUBLE ENERGY CONSUMPTION IN 5 YEARS

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WASHINGTON - While the high-tech industry pursues solutions to global warming, it's also contributing to the problem.

Ever-multiplying computer server facilities will double their consumption of energy in the next five years, according to a U.S. Environmental Protection Agency study sent to Congress on Friday. EPA officials and some industry leaders hope the findings will spur policies to make large computer facilities, and the cooling systems they require, more efficient.

Server facilities - ranging from single units tucked away in closets for small office use to huge regional data centers - accounted for 1.5 percent of total U.S. electricity consumption in 2006 at a cost of $4.5 billion, the 133-page report found. That's equivalent to the annual energy consumption of 5.8 million households, and about the same amount of energy used by the entire U.S. transportation manufacturing industry - the factories that make vehicles, aircraft and ships.

In Northern and central California, data centers used 400 to 500 megawatts, enough energy to power at least 300,000 homes, according to an estimate last year by Pacific Gas & Electric.

The need for more servers and data storage is booming, with the growth of electronic commerce, record-keeping and Internet communication and entertainment. And the U.S. government is the biggest single user, accounting for about 10 percent of the nation's computer energy demand, according to the report. That cost taxpayers $450 million.

The six-month report, the result of a bill sponsored by Rep. Anna Eshoo, D-Palo Alto, was based on research from the Lawrence Berkeley National Laboratory and involved industry representatives who attended a Silicon Valley workshop in February.

The report recommends several ways to limit energy use, from incentives for energy-efficient equipment to new, compatible standards to measure energy consumption. The goal is for the EPA's Energy Star program - which gives consumers easy-to-read standardized information on appliances, desktop and laptop computers - to provide the same sort of data on large computer equipment.

Eshoo was able to include the creation of a national program to disseminate information about energy efficiency in data centers in an energy bill now working its way through Congress.

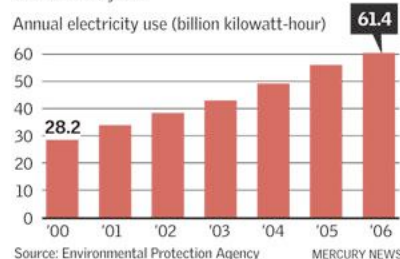Another recommendation of the report is for the federal government, which operates 28 of the world's 100 largest supercomputers, to set a "best practices" example with its equipment and establish procurement practices for contractors that would reward efficiency.

"Some of those rules are already in place and we need to implement more. The federal government is so big that we have a major impact on the marketplace," said Andrew Fanara, who oversees Energy Star programs at the EPA and worked on the report.

Fanara said the good news in the report is that industry recognized the energy problem and is taking steps toward greater efficiency. Last year, Intel, Sun Microsystems, IBM, Hewlett-Packard and Advanced Micro Devices set up a non-profit organization to develop energy-efficiency standards for servers.

"Few industries are so well-positioned to deploy their own technology to monitor and control energy consumption," Fanara said.

The report also identified PG&E as the nation's "most active utility in the data center sector" with its program of rebates to companies that use more efficient network servers.

But some barriers remain to greater efficiency, the EPA report found. Data center operators' biggest concern is downtime, not energy savings, and the operators who purchase and operate the equipment are often not the same people in the company who pay the utility bills.

Several industry leaders said they participated in the EPA effort because they want to cooperate on goals while avoiding restrictions that could hamper growth.

"The private sector must continue to lead here," said Lowell Sachs, a senior manager for Sun. "Fortunately, market pressures are already driving IT companies and their customers toward greater adoption of more efficient operations."

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In this 2006 file photo, Rich Friedrich, Director of Enterprise Systems... (Karen T. Borchers)

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Electricity use for data storage, ranging from small office servers to large data centers, more than doubled from 2000 to 2006, and is expected to double again in the next five years.

Annual electricity use (billion kilowatt-hour)

'00: 28.2   '06: 61.4

Source: Environmental Protection Agency   MERCURY NEWS

Sachs said that while a growing minority of companies want to "be more green" and reduce the environmental impact of electricity use, many companies face a more practical concern - running out of space, power or cooling capacity to grow their businesses.

For more information about the report about energy use by computer servers, or for information on energy conservation in general, go to **www.energystar.gov**.

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